UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte KURT E. SPEARS

Appeal No. 2006-0685
(Application 09/558,434)[1]

ON BRIEF

Before LEE, TORCZON and MEDLEY, Administrative Patent Judges.

LEE, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134 from the examiner's rejection of the appellant's claims 1-5.

References relied on by the Examiner

Pool	5,308,970	May, 1994
Hashimoto et al. ("Hashimoto")	4,689,686	August, 1987
Watanabe et al. ("Watanabe")	6,351,284	February, 2002

The Rejections on Appeal

Claims 1, 4 and 5 stand rejected under 35 U.S.C. § 103 as unpatentable over Pool.

---

[1] Filed April 25, 2000. The real party in interest is Hewlett-Packard Company.

Claim 2 stands rejected under 35 U.S.C. § 103 as unpatentable over Pool and Hashimoto.

Claim 3 stands rejected under 35 U.S.C. § 103 as unpatentable over Pool and Watanabe.

The Invention

The claimed invention is directed to a method for scanning an image by use of an array of photosensors and by exposing the array of photosensors to light from the same image twice. Specifically, the array of photosensors is exposed to light from an image and a first portion of the charges from the array of photosensors is shifted to an amplifier and a second portion of the charges from the array of photosensors is dumped. The array of photosensors is exposed to light from the image again. The first portion of charges from the array of photosensors that was previously shifted to an amplifier is dumped and the second portion of charges from the array of photosensors that was previously dumped is shifted to the amplifier.

Independent claim 1 is reproduced below:

> 1. A method for scanning comprising:
>
> exposing an array of photosensors to light from an image;
>
> shifting a first portion of charges from the array of photosensors to an amplifier;
>
> dumping a second portion of the charges;
>
> exposing the array of photosensors to light from the image again;
>
> dumping the first portion of charges from the array of photosensors; and
>
> shifting the second portion of charges from the array of photosensors to the amplifier.

Discussion

A. The rejection of claims 1, 4 and 5 over Pool

Obviousness is a question of law based on findings of underlying facts relating to the prior art, the skill of the artisan, and objective considerations. See Graham v. John Deere Co., 383 U.S. 1, 17, 148 USPQ 459, 467 (1966). First and foremost, however, "the name of the game is the claim." In re Hiniker Co., 150 F.3d 1362, 1369, 47 USPQ2d 1523, 1529 (Fed. Cir. 1998). It is the claimed invention that must be compared to the prior art for determining patentability. During examination before the U.S. Patent Trademark Office, claim terms are properly given the broadest reasonable construction that is still consistent with the specification. In re Morris, 127 F.3d 1048, 1054, 44 USPQ2d 1023, 1027 (Fed. Cir. 1997); In re Bond, 910 F.2d 831, 833, 15 USPQ2d 1566, 1567 (Fed. Cir. 1990).

Claim 1 recites a step of exposing an array of photosensors to light from an image, a step of shifting a first portion of "charges from the array of photosensors" to an amplifier, and a step of dumping a second portion of "the charges." Important to our analysis of the claim is the meaning of "charges from the array of photosensors" and of "the charges." It is not in dispute that a photosensor in the context of the appellant's invention, and from the perspective of one with ordinary skill in the art, senses the magnitude of light incident on the photosensor and generates a corresponding electrical charge. But it also appears not in dispute that charges may also be generated from within an array of photosensors that have nothing to do with the light from an image and incident upon the photosensors. For example, thermal noise is discussed in the last paragraph beginning on page 4 of the specification. Note further that the appellant's

specification refers to the shift register 104 that shifts charges generated from the photosensors 102 as a part of the "photosensor array" 100. (Specification at page 4, lines 11-19 and Figure 1). Thermal noise can be accumulated within shift register 104. (Specification at page 5, lines 2-13.

Claim 1 does not specify the particular nature of the recited "charges from the array of photosensors." Based on the foregoing, the recited charges need not bear any relation to light incident on the photosensors. It may be charges corresponding to the image or charges due to undesirable noise. If the appellant intended to claim only charges which correspond to light incident on the photosensors in the array, the claims could have easily been amended to state so.

Claim 1 further recites another step, a step of exposing the array of photosensors to light from the image again. Appearing immediately below this second exposing step are two further steps, one which dumps the first portion of charges from the array of photosensors, which had earlier been recited as being shifted to an amplifier, and another one which shifts the second portion of charges to the amplifier, which had earlier been recited as being dumped. Although generally there is no presumed chronological order to various steps which may appear in a process claim, in this case the implied association of the first pair of shifting and dumping steps to the first exposing step, and of the second pair of shifting and dumping steps to the second and reiterated exposing step is self-evident. The second pair of steps refer back to the first and second defined portions of the first pair of steps and are separated from the first exposing step by an intervening second exposing step. A contrary reading would lead to contradictory limitations as well as a result not consistent with the specification, i.e., the first portion of the charges is

shifted to an amplifier and that very same portion of charges is dumped, and the second portion of the charges is shifted to an amplifier and that very same portion of charges is dumped.

Thus, according to claim 1, the array of photosensors is exposed to an image, and a first portion of the charges from the array is shifted to an amplifier and a second portion dumped. Then, the array is exposed to the same image again. This time, the first portion of charges from the array, which had previously been shifted to an amplifier is dumped, and the second portion of charges from the array, which had previously been dumped, is shifted to an amplifier.

The Pool reference discloses a charge-coupled device comprising an image section, in which pockets of charge are produced by the incidence of light on the device, and two read-out registers situated at opposite ends of the image section. (Pool, column 2, lines 41-46). The Pool reference describes that the pockets of charge in the image section can be read out of the image section along either one of the two read-out registers and that the registers are merged so that the device has one output common to both registers. (Pool, column 2, lines 46-50). As discussed above the appellant's specification describes a read-out shift register 104 as being included in photosensor array 100. Accordingly, the examiner did not err when broadly construing the term photosensor array in the claim to allow for the inclusion of read-out shift registers as in the case of the Pool reference. The entire charge coupled device of Pool (Figure 2), inclusive of the image section 40 and the read-out shift registers 42 and 44 on opposite ends of the image section, constitutes a photosensor array within the meaning of appellant's claim 1.

Although Pool discloses two read-out shift registers 42 and 44, only one is used at a time for outputting image data from the image section 40, depending on the direction of image transfer

from the image section. While one readout register is outputting image information the other is outputting only a small current due mainly to thermal effects in the substrate of the charge coupled device known as "dark current." (Pool. column 3, lines 50-55). In one embodiment, the dark current from one shift register is allowed to be added to the image data outputted from the other. (Pool, column 3, lines 53-57). But Pool also discloses another embodiment for when better noise performance is required. (Pool, column 3, lines 58-60). According to that embodiment, dark current from one shift register 44 is dumped into a charge sink 54 while image data is outputted from shift register 42. (Pool, column 3, line 61 through column 4, line 2). Pool describes that charge contents of the image array are outputted to an amplifier. (Pool, column 1, lines 53-54). Pool also discloses that, equally, image data may be read out of shift register 44 while dark current charges from shift register 42 may be dumped. (Pool, column 4, lines 2-4).

The examiner does not cite anything from Pool for the feature of exposing the photosensor array to the same image twice and acknowledges that Pool does not disclose the feature. (Answer on page 4, lines 15-16; on page 5, lines 1-2; on page 9, lines 7-8). In the absence of the second exposing step subjecting the photosensor array to the same image, Pool is also missing disclosure for what to do with resulting charges which correspond to charges that had previously been either shifted or dumped in connection with the first exposing step.

The examiner makes up for the above-noted deficiency of Pool by resort to "Official Notice." In the examiner's answer from page 4, line 15 to page 5, line 2, it is stated: "As far as exposing the array of photosensors to light from the image again, the examiner takes Official Notice that **it is well known in the art for imaging sensors to be exposed to light during**

different intervals" (Emphasis added.). On that basis, the examiner concludes (Answer on page 5, lines 10-14):

> [I]t would have been obvious to one of ordinary skill in the art at the time of invention for the imaging sensor (CCD) disclosed by Pool to be exposed to light on several different occasions. Doing so would provide a means for either reading out or dumping pockets of charge produced by a CCD array that is exposed multiple times (col.2, lines 41-64).

Also, in the examiner's answer on page 9, lines 7-10, it is stated:

> The Examiner agrees that the Pool reference does not explicitly teach multiple exposures for one image, however Official Notice was taken that **it is well known in the art for imaging sensors to be exposed to light from the same image multiple times**.

Use of "official notice" to complete missing teachings from the prior art is proper only for specific facts which are so well known that they are not subject to reasonable dispute. Officially noticed facts need to be "capable of such instant and unquestionable demonstration as to defy dispute." In re Ahlert, 424 F.2d 1088, 1091, 165 USPQ2d 418, 420 (Fed. Cir. 1970). Thus, officially noticed facts should be specific. A broad and all-inclusive assertion encompasses too much and covers too many possibilities for the assertion to be capable of instant and unquestionable demonstration sufficient to defy dispute. Here, it is not known what the examiner means by "different intervals." Also, that the image sensor is exposed to light during different intervals does not necessarily mean it is exposed to the same image in different intervals.

The statement "it is well known in the art for imaging sensors to be exposed to light during different intervals" does not provide any context. Neither does the statement "it is well known in the art for imaging sensors to be exposed to light from the same image multiple times."

Both statements, without context, are very broad and encompass a myriad of different applications and circumstances. It is suspect that exposing the photosensor array to the same image multiple times is well known no matter what is the circumstance and scenario. The examiner did not explain the circumstances in which one with ordinary skill in the art might want to expose a photosensor array to the same image again and did not explain what one with ordinary skill in the art would typically do with the charges resulting from the second exposure in relation to the charges resulting from the first exposure. The lack of specificity and explanation render the stated fact not capable of immediate and unquestionable demonstration. We find the examiner's use of official notice in this case, as described above, to have been improper.

The examiner's statement that it would have been obvious to one with ordinary skill in the art to expose Pool's charge coupled device to light on several different occasions because doing so would provide a means for dumping or reading out charges produced by an array that is exposed multiple times begs the question why should the array be exposed multiple times. The explanation is without meaningful significance and also unpersuasive.

Even assuming that in the imaging art it has been known to expose a photosensor array to the same image twice for some purpose, the questions still are why would one with ordinary skill in the art do so in the case of the photosensor array disclosed by Pool, and what one with ordinary skill in the art would do, for carrying out that purpose, with the charges resulting from the second exposure in relation to the same charges resulting from the first exposure. Those questions remain.

According to the examiner, the appellant did not traverse the examiner's reliance on "official notice" and therefore what was officially noticed by the examiner became admitted prior art (Answer at page 9, lines 10-13). The appellant does not dispute that generally, and without knowledge of the specific context or purpose, exposing a photosensor array to the same image multiple times is not novel. However, it is an incorrect characterization of the appellant's position to say that the appellant did not traverse the examiner's view insofar as exposing the photosensor array to the same image twice in an imaging system such as that of Pool is concerned. It is the appellant's position that in an imaging system like Pool's, time delay integration is used which typically requires continuous exposure while the object being imaged is moved across the array, and that there is no multiple exposure of the array to the same image. (Brief on page 6, lines 11-13; Reply Brief on page 2, lines 21-26). For the specific context of time delay integration imaging, the examiner did not and cannot point to any agreement, either express or implied, by the appellant that multiple exposures of the array to the same identical image is well known. Indeed, the examiner never made any such specific assertion. The appellant had no obligation to traverse a position that was not asserted by the examiner. The appellant did not admit that in the context of a time delay integration imaging system like that disclosed in Pool it was well known in the art to expose a photosensor array to the same image multiple times. Accordingly, that difference between the claimed invention and the prior art has not been properly accounted for by the examiner in the obviousness analysis.

For the foregoing reasons, the rejection of claim 1 under 35 U.S.C. § 103 as unpatentable over Pool cannot be sustained. Each of claims 4 and 5 separately depends from claim 1. The rejection of claims 4-5 under 35 U.S.C. § 103 as unpatentable over Pool also cannot be sustained.

B. The rejection of claim 2 over Pool and Hashimoto

Claim 2 depends on claim 1 and further recites the additional step of shifting charges from the array of photosensors at a shift rate that is higher than a normal shift rate. Hashimoto was relied on by the examiner to meet this additional limitation and does not cure the initial deficiencies of the Pool reference with regard to the features of claim 1. Accordingly, the rejection of claim 2 under 35 U.S.C. § 103 as unpatentable over Pool and Hashimoto cannot be sustained.

C. The rejection of claim 3 over Pool and Watanabe

Claim 3 depends from claim 1 and further recites that the steps of dumping includes discharging, simultaneously, a portion of charges from the array of photosensors. Watanabe was relied on by the examiner to meet this additional limitation and does not cure the initial deficiencies of the Pool reference with regard to the features of claim 1. Accordingly, the rejection of claim 3 under 35 U.S.C. § 103 as unpatentable over Pool and Watanabe cannot be sustained.

Conclusion

The rejection of claims 1, 4 and 5 under 35 U.S.C. § 103 over Pool is **reversed**.

The rejection of claim 2 under 35 U.S.C. § 103 over Pool and Hashimoto is **reversed**.

The rejection of claim 3 under 35 U.S.C. § 103 over Pool and Watanabe is **reversed**.

REVERSED

/Jameson Lee/	
JAMESON LEE	
Administrative Patent Judge	
/Richard Torczon/	BOARD OF PATENT APPEALS AND INTERFERENCES
RICHARD TORCZON	
Administrative Patent Judge	
/Sally C. Medley/	
SALLY C. MEDLEY	
Administrative Patent Judge	

Appeal No. 2006-0685
Application 09/558,434

By First Class Mail

Attorney for the appellant:

Augustus W. Winfield
Hewlett-Packard Company
Intellectual Property Administration
P.O. Box 272400
Mail Stop 35
Fort Collins, Colorado 80527-2400